

WHAT IS CLAIMED IS:

1. An air intake apparatus comprising:

an air intake duct provided with an inlet through which intake air should be introduced;

an air cleaner disposed on the downstream side of the air intake duct and for filtering the intake air;

an air cleaner hose disposed on the downstream side of the air cleaner and for supplying the filtered intake air to a combustion chamber of an engine to thereby define an intake air passageway laid out between the inlet and the combustion chamber;

an air-permeable member disposed to block a communicating path disposed in a passageway wall surrounding an antinode of a lower resonance mode corresponding to the whole passageway length of the intake air passageway; and

a valve for opening the communicating path allowing the inside of the intake air passageway to communicate with the outside thereof at least when there occurs the lower resonance mode disposed in the passageway wall.

2. An air intake apparatus according to Claim 1, wherein:

the air cleaner includes a casing, and an element for dividing the inside of the casing into a dirty side and a clean side; and

the valve and the air-permeable member are disposed in the casing.

3. An air intake apparatus according to Claim 1, wherein the valve opens the communicating path at least when an engine speed is not higher than an upper limit value of an engine speed range where the lower resonance mode corresponding to the whole passageway length of the intake air passageway occurs.

4. An air intake apparatus according to Claim 1, further comprising a sound insulation chamber provided on the downstream side of the air-permeable member in the communicating path and for attenuating transmitted noise passing through the air-permeable member.

5. An air intake apparatus according to Claim 1, wherein the communicating path is opened and closed with an engine speed being used as an index.

6. An air intake apparatus according to Claim 1, wherein the valve closes the communicating path when an engine speed is higher than an upper limit value of an engine speed range where the lower resonance mode corresponding to the whole passageway length of the intake air passageway occurs.

7. An air intake apparatus comprising:

an air intake duct provided with an inlet through which intake air should be introduced;

an air cleaner disposed on the downstream side of the air intake duct and for filtering the intake air;

an air cleaner hose disposed on the downstream side of the air cleaner and for supplying the filtered intake air to a combustion chamber of an engine to thereby define an intake air passageway laid out between the inlet and the combustion chamber;

a communicating path disposed where there is an antinode of the lower resonance mode corresponding to the whole length of the intake air passageway;

an air-permeable member for blocking the communicating path; and

a valve for opening and closing the communicating path.

8. An air intake apparatus according to Claim 7, wherein the air-permeable member is disposed on an inner side of the communicating path than the valve.

9. An air intake apparatus according to Claim 7, wherein the valve is disposed on an inner side of the communicating path than the air-permeable member.